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Patent Office

(11) (C) **2,001,020**
(22) 1989/10/19
(43) 1990/05/04
(45) 1993/11/09
(52) 325-19
C.L. CR. 319-125

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S
1993/11/09
1993/11/09

(51) INTL.CL. H04B-001/38; H01M-002/10

(19) (CA) CANADIAN PATENT (12)

(54) Battery Housing with Integral Latch and Positive
Displacement Apparatus

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(30) (US) U.S.A. 269,853 1988/11/04

(57) 16 Claims

Canada

CCA 3254 (10-82) 41 7530-21-936-3254

BATTERY HOUSING WITH INTEGRAL LATCH AND
POSITIVE DISPLACEMENT APPARATUS

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Abstract of the Invention

10 A battery housing (105) with an integral latch (201) and
a cantilevered spring finger positive displacement mechanism
(320, 321) is disclosed. The slide-on battery is captivated by
guide rails (307-312) on each side of the mating surface of the
battery housing. When the battery is properly located, a
torsion bar latch (201) locks the battery in place. When the
15 latch is activated by the user to remove the battery,
cantilevered spring fingers (320, 321) force the battery housing
away from its locked position.

Claims:

1. A slide-on battery housing for a portable radiotelephone enclosing electrochemical cells and having at least one surface by which the battery housing assembly is attached to the portable radiotelephone, the battery housing comprising:
 - 10 a latch mechanism attached to the battery housing for locking the battery housing to the portable radiotelephone;
 - 15 at least one positive displacement spring finger mechanism disposed on the attaching surface of the battery housing and cantilevered in a direction perpendicular to the plane of the attaching surface; and
 - 20 at least two guide rails on the attaching surface of the battery housing for securing the battery housing to the portable radiotelephone further comprising:
 - (a) lip portions perpendicular to the plane of the attaching surface and on opposing edges of the attaching surface extending at least part of the length of said opposing edges and
 - (b) at least one elongated protrusion on facing surfaces of each said lip portion and extending along each said lip portion parallel to the plane of the attaching surface.

2. A battery housing for a portable radiotelephone having at least two mating housing portions securing electrochemical cells therebetween and having at least one surface by which the battery housing may be detachably connected to the portable radiotelephone, the housing comprising:
 - 5 a latch mechanism attached to one of the mating housing portions for locking the battery housing to the portable radiotelephone further comprising:
 - 10 (a) an elongate beam element supported at each end to form a torsion bar,
 - (b) a push button lever element disposed perpendicularly to the center line of said torsion bar and between the two ends of said torsion bar, and
 - 15 (c) a catch element lever disposed perpendicularly to the centerline of said torsion bar and between the ends of said torsion bar;
 - 20 at least one positive displacement spring finger mechanism disposed on the connecting surface of the battery housing; and
 - at least two guide rails on the connecting surface of the battery housing for securing the battery housing to the portable radiotelephone.

3. A battery housing in accordance with claim 2 further comprising said latch mechanism disposed on a first of the at least two mating housing portions and said positive displacement spring finger mechanism disposed on a second of the at least two mating housing portions.
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4. A battery housing in accordance with claim 2 wherein said push button lever element is disposed essentially at the midpoint between the two ends of said torsion bar.
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5. A battery housing in accordance with claim 2 wherein said catch element lever is disposed essentially at the midpoint between the ends of said torsion bar.
- 10 6. A battery housing in accordance with claim 2 wherein said catch element lever is disposed opposite said push button lever element.
- 15 7. A battery housing in accordance with claim 2 wherein the connecting surface of the battery housing is an essentially planar surface.
- 20 8. A battery housing in accordance with claim 7 wherein said positive displacement spring finger is further cantilevered in a direction perpendicular to the plane of the connecting surface.

9. A battery housing for a portable transceiver, enclosing electrochemical cells and having at least one surface by which the battery housing assembly is attached to the portable transceiver, the battery housing comprising:
 - 5 a latch mechanism attached to the battery housing for locking the battery housing to the portable transceiver;
 - a positive displacement mechanism disposed on the attaching surface of the battery housing; and
- 10 at least two guide rails on the attaching surface of the battery housing for slideably securing the battery housing to the portable transceiver.

10. A battery housing in accordance with claim 9 wherein said latch mechanism further comprising:
 - 5 an elongate beam element supported at each end to form a torsion bar;
 - a push button lever element disposed perpendicularly to the center line of said torsion bar and between the two ends of said torsion bar; and
 - 10 a catch element lever disposed perpendicularly to the centerline of said torsion bar and between the ends of said torsion bar.
11. A battery housing in accordance with claim 10 wherein said push button lever element is further disposed 15 essentially at the midpoint between the two ends of said torsion bar.
12. A battery housing in accordance with claim 10 wherein said catch element lever is disposed essentially at the 20 midpoint between the ends of said torsion bar.
13. A battery housing in accordance with claim 10 wherein said catch element lever is disposed opposite said push button lever element. 25
14. A battery housing in accordance with claim 9 wherein said attaching surface of the battery housing is an essentially planar surface.
- 30 15. A battery housing in accordance with claim 14 wherein at least one said guide rail further comprising:

lip portions perpendicular to the plane of the attaching surface and on two opposing edges of the attaching surface extending at least part of the length of said opposing edges and at least one elongated protrusion on facing surfaces of

5 each said lip portion and extending along each said lip portion parallel to the plane of the attaching surface.

16. A battery housing in accordance with claim 14 wherein said positive displacement mechanism further

10 comprises a spring finger cantilevered in a direction perpendicular to the plane of the attaching surface.



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FIG. 1

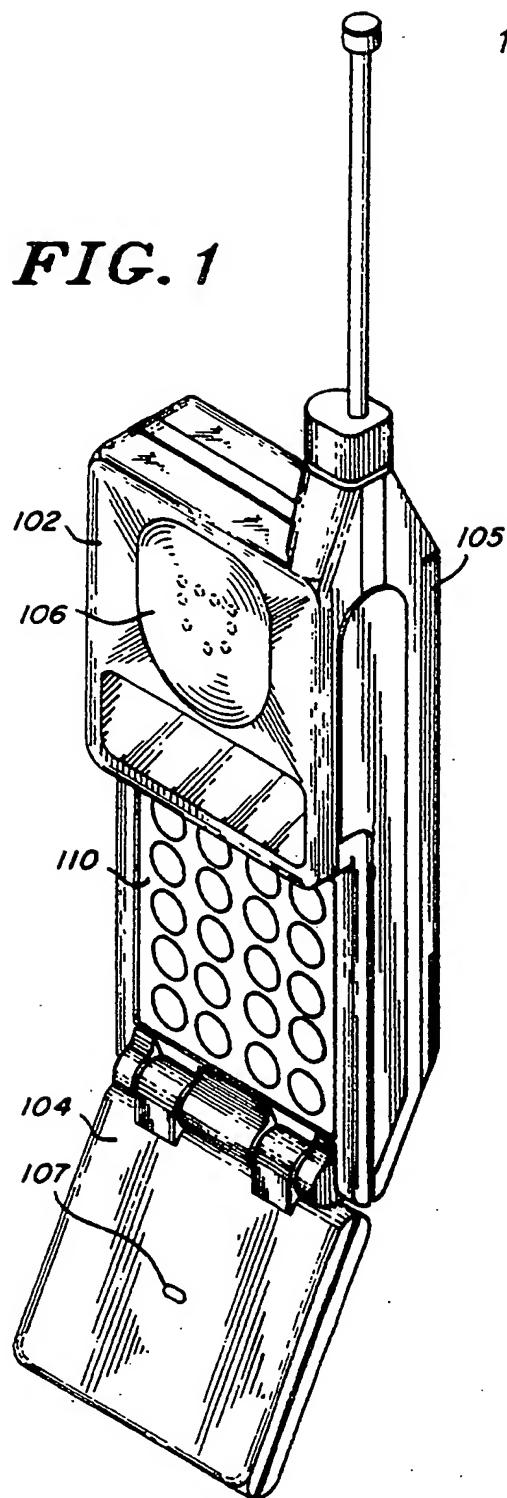
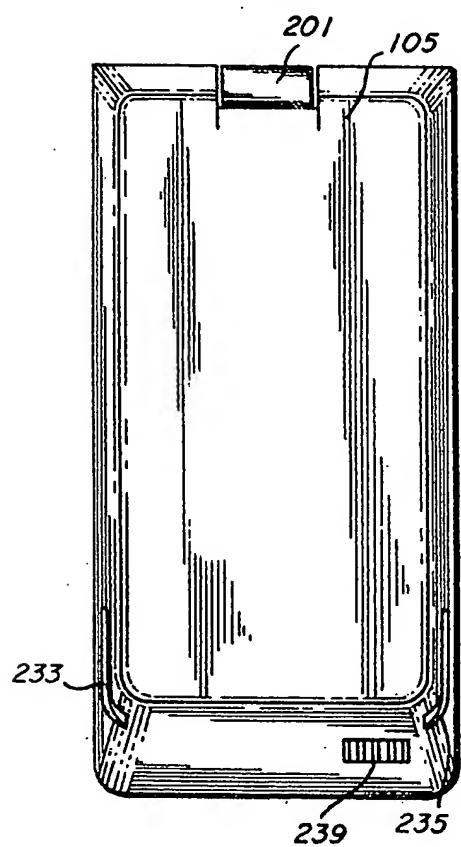


FIG. 2A

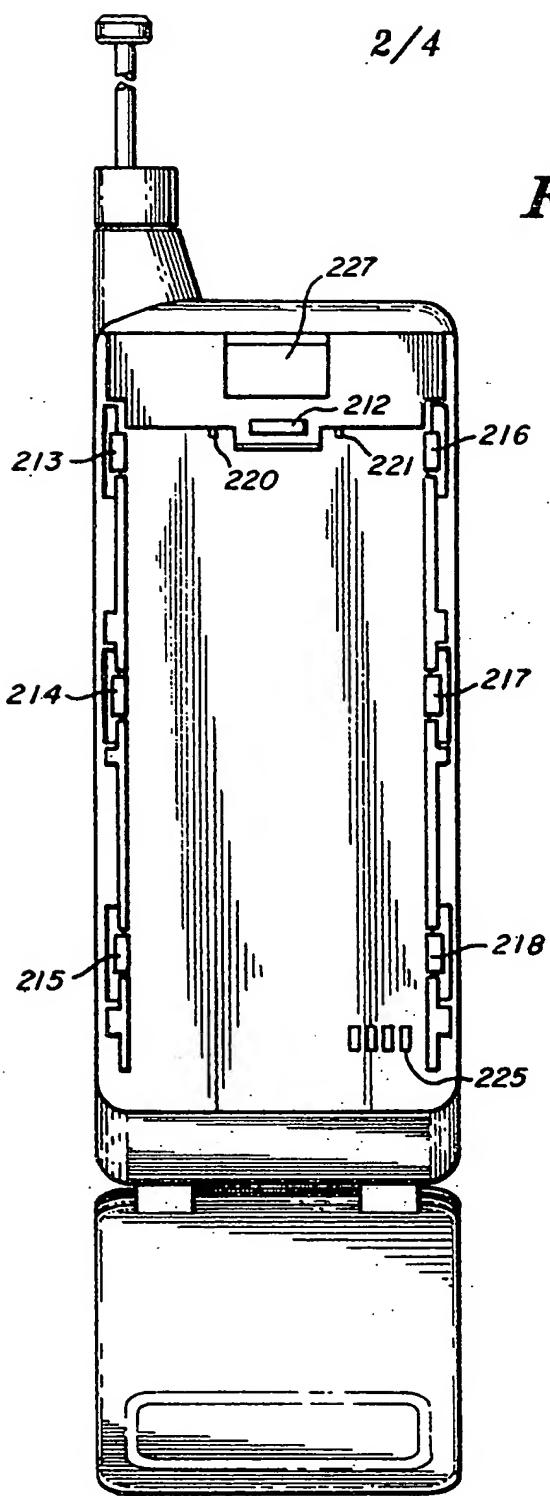


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FIG. 2B



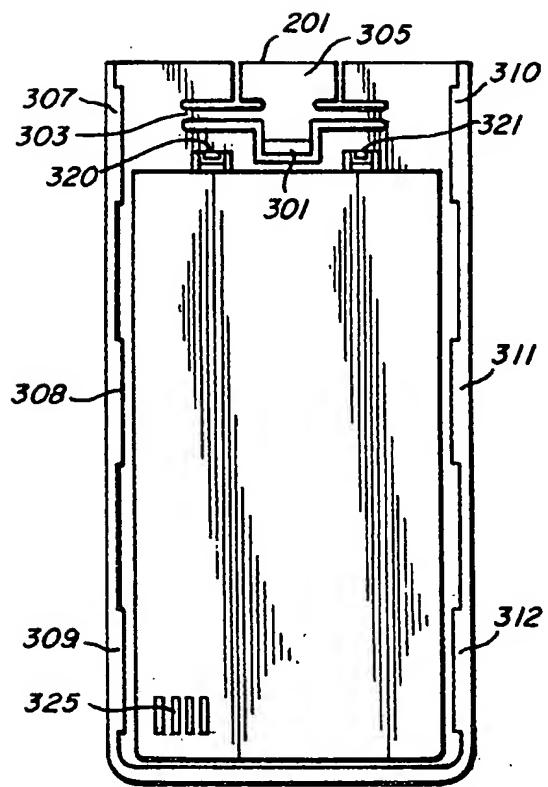
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FIG. 3



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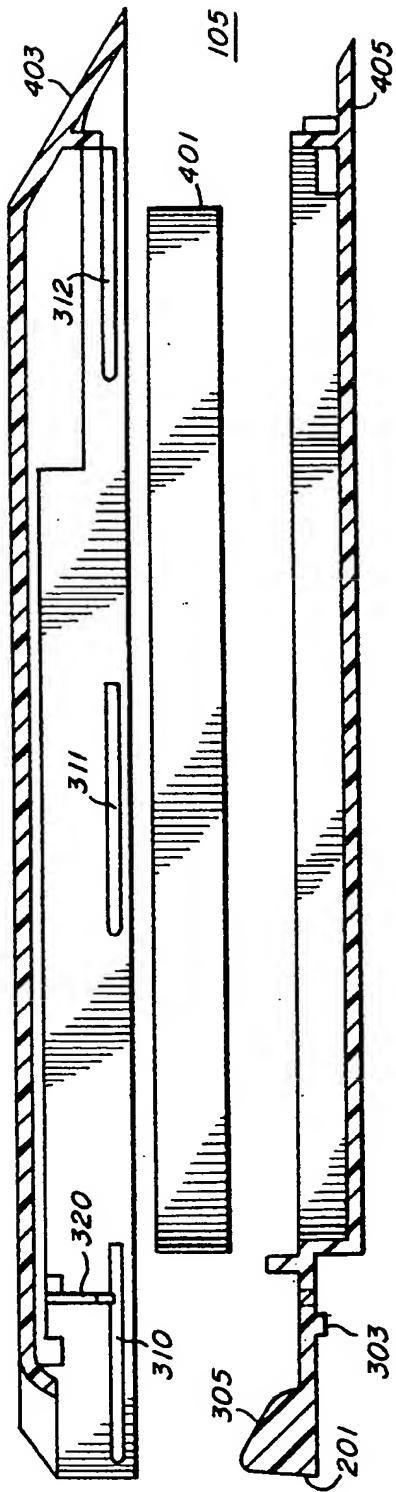


FIG. 4

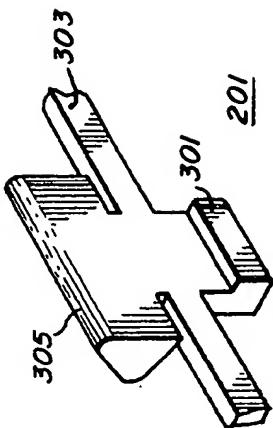


FIG. 6

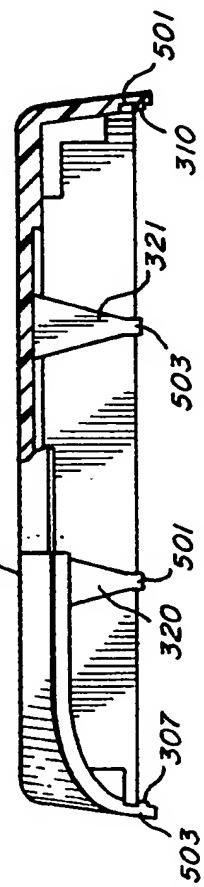


FIG. 5

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